User Manual

GV35OK-GV33FK

GIrcjĘ OK35-FK33 @E?/066 Ampc g5-g3-g1
Km`gjc KgIg+GRV Kmrfcp`m_pb

Version March 201/

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Safety Information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

The symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Check local regulations for disposal of electronic products.

Technical Support

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance. Visit the BCM TW website for FAQ, technical guide, BIOS updates, driver updates, and other information:

http://www.bcmimb.com.tw

Conventions Used in This Guide

To make sure that you perform certain tasks properly, take note of the following symbols used throughout this manual.

DANGER/WARNING: Information to prevent injury to yourself when trying to complete a task.

CAUTION: Information to prevent damage to the components when trying to complete a task.

IMPORTANT: Instructions that you MUST follow to complete a task.

NOTE: Tips and additional information to help you complete a task.

Packing List

Before you begin installing your single board, please make sure that the following materials have been shipped:

- 1 x Intel Core i7/i5/i3 Mobile Processor Mini-ITX Main board
  - 1 x CD-ROM contains the followings:
  - User's Manual in PDF file
  - Drivers
- 1 x COM1 Cable (9P/260mm)
- 1 x SATA Cable Kit (SATA/Power)
- 1 x SATA DATA Cable
- 1 x I/O Shield
- 1 x Startup Manual
- 1 x CPU Cooler

If any of the above items is damaged or missing, please contact your retailer.

Revision History

Revision	Revision History	Date
V 1.0	First release for PCB 1.00	September 3, 2010

Specifications Summary

Specifications

System	
CPU	Intel Core i7/i5/i3 Mobile Processor
BIOS	AMI 32Mb SPI BIOS
System Chipset	Intel QM57/HM55 Chipset
I/O Chipset	Winbond W83667HG-A
Memory	2 x 200-pin SODIMM socket supports up to 8 GB Dual channel DDR3 1066/800 SDRAM
Watchdog Timer	Reset: 1 sec.~255 min. and 1 sec. or 1 min./step
H/W Status Monitor	Monitoring CPU temperature, voltage, and cooling fan status. Auto throttling control when CPU overheats
Expansion Slots	1x PCI-E x16 (PEG & SDVO) 1x Mini PCI-E x1
S3	S3 Support
SmartFan Control	Yes
I/O	
MIO	2 x COM(1F/1R) with power 4 x SATA/SATAII 1 x Display Port 1 x HDMI 1 x VGA 1 x LVDS 1 x LVDS backlight
USB	8 x USB 2.0 ports
DIO	8-bit General Purpose I/O for DI and DO
Display	
Chipset	Intel Graphics Media Accelerator HD
Display Memory	Intel DVMT supports 1.7GB video memory
Resolution	2048 x 1536 @ 32 bpp(@ 60Hz)
Dual Display	CRT + LVDS, CRT + Display Port ,CRT + HDMI
LVDS	Dual-channel 24-bit LVDS
Display Port	Support eDP Standard Version 1.1
HDMI	TI Level Shift SN75DP139RGZR
Audio	
Audio Codec	Realtek ALC888 Audio Codec 5.1+2 CH. with two independent audio stream
Audio Interface	Mic in, Line in, Line out

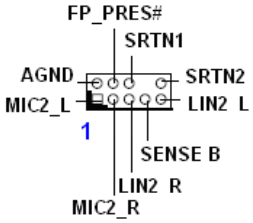
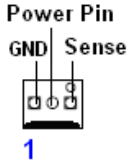
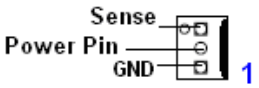
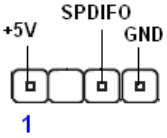
Ethernet	
LAN1	Intel® 82577-LM Gigabit LAN
LAN2	Realtek RTL8111C PCI-E Gigabit LAN

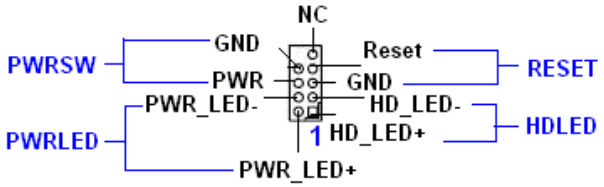
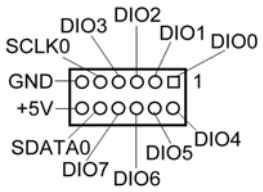
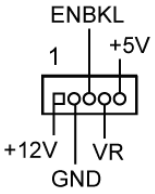
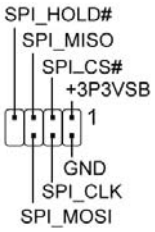
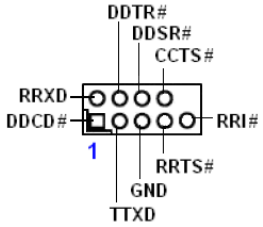
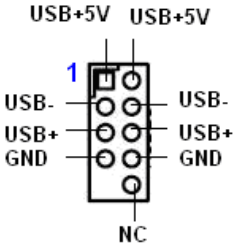
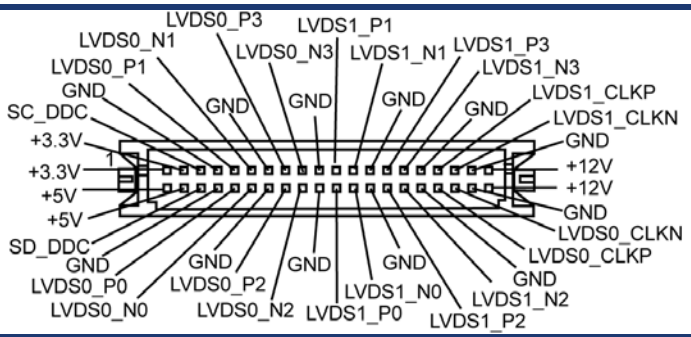
Mechanical & Enviormental	
Power Type	ATX
Operating Temperature	0~60°C (32~140°F)
Operating Humidity	0%~90% relative humidity, non-condensing
Size (L x W)	6.69" x 6.69" (170 mm x 170 mm)
Weight	**0.88 lbs (0.4 Kg)**

Jumpers

Label	Function	Note	
CLRTC	Clear CMOS	Normal *	Clear CMOS

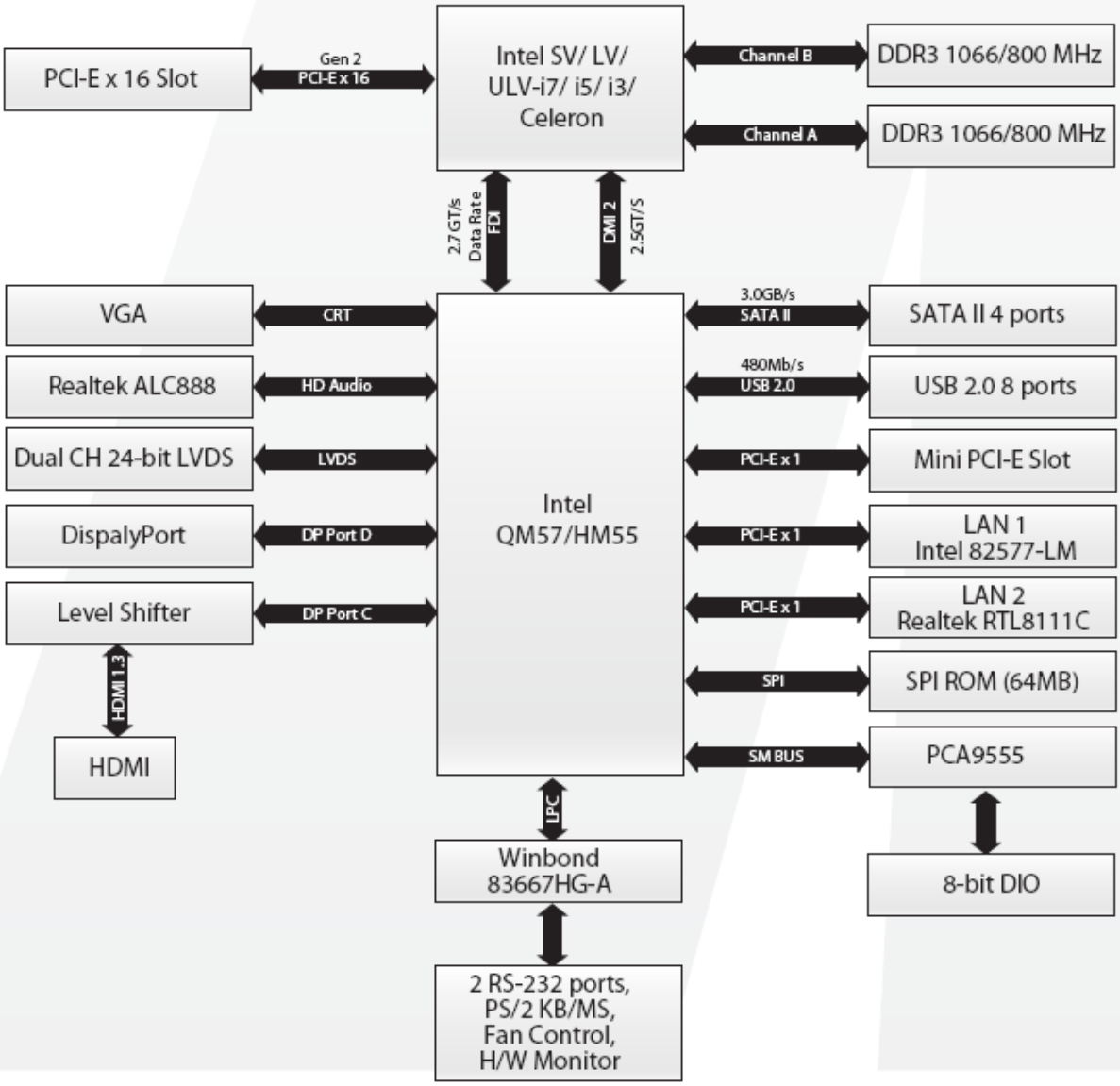
Connectors

Label	Function	Note
AAFP1	Front Panel Audio Connector	
CHA_FAN	Chassis Fan Connector	
CPU_FAN	CPU Fan Connector	
SPDIF_OUT1	Digital Audio connector	

F_PANEL1	**System Panel Connector**	
JDIO1	**Digital I/O Connector**	
JBKL1	**LCD Inverter Connector**	
SPI1	**SPI Connector**	
COM2	**Serial Port Connector**	
USB56, USB78	**USB 2.0 Connector**	
JLVDS1	**LVDS Connector**	

* Specifications are subject to change without notice.

Block Diagram



This chapter describes the motherboard features and the new technologies it supports.

1 Product introduction

Production Introduction

1.1 Before you Proceed

Take note of the following precautions before you install motherboard components or change any motherboard settings.

- Unplug the power cord from the wall socket before touching any component.
- Use a grounded wrist strap or touch a safely grounded object or a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity
- Hold components by the edges to avoid touching the ICs on them.
- Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.
- Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

1.2 Motherboard Overview

Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it. Refer to the chassis documentation before installing the motherboard.

Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so can cause you physical injury and damage motherboard components.

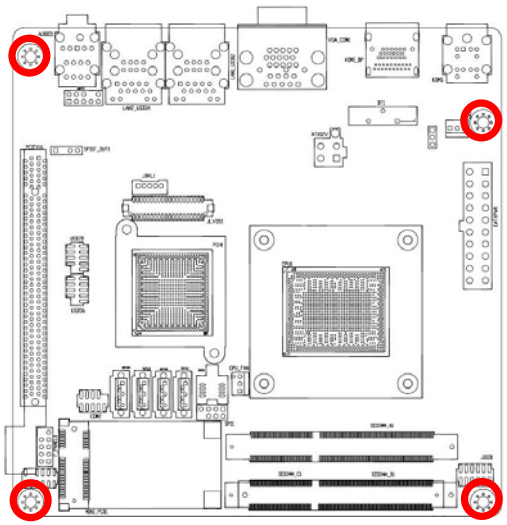
1.2.1 Placement Direction

When installing the motherboard, make sure that you place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image below.

1.2.2 Screw Holes

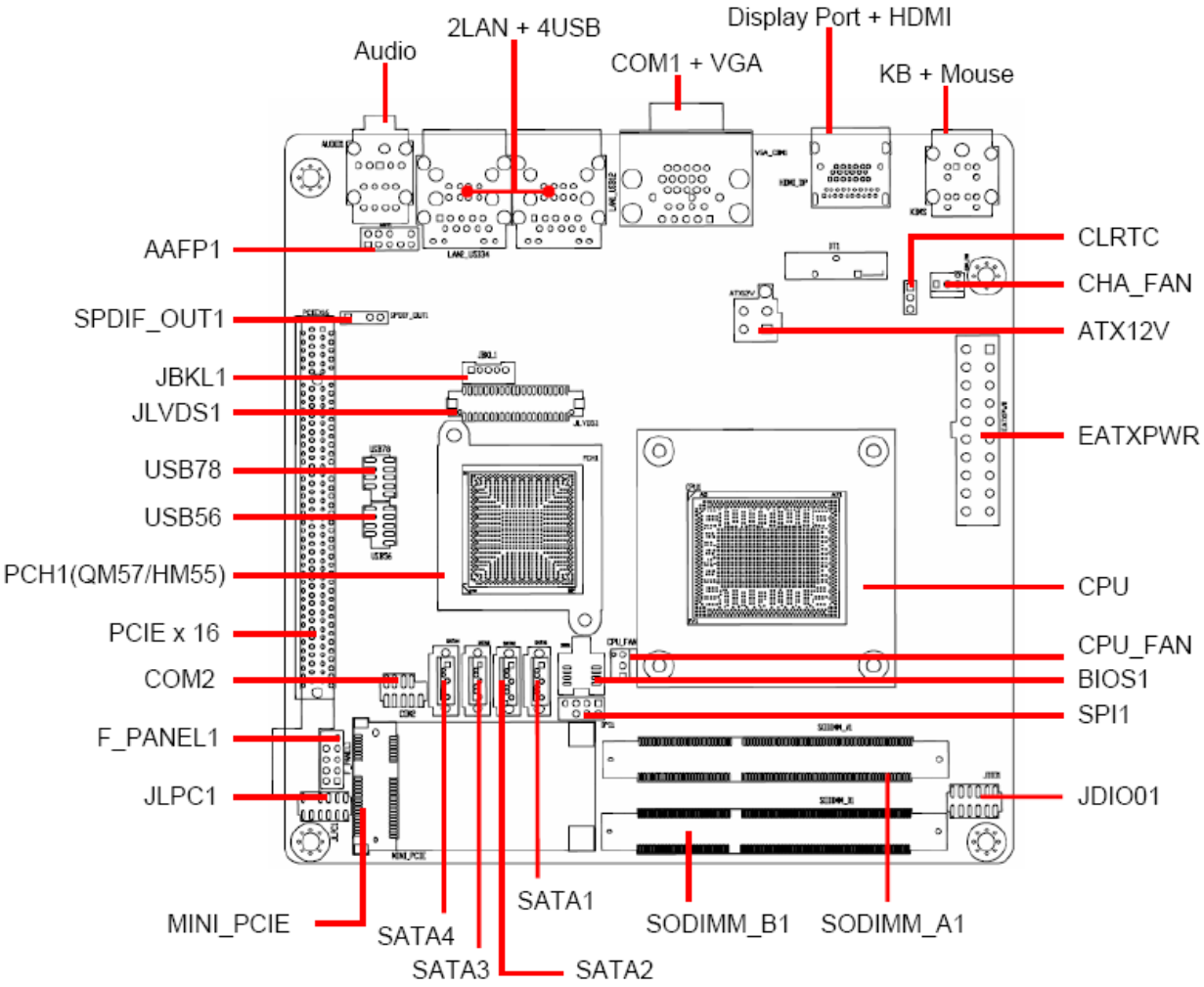
Place four (4) screws into the holes indicated by circles to secure the motherboard to the chassis.

Do not over tighten the screws! Doing so can damage the motherboard.



Place this side towards the rear of the chassis

1.3 Motherboard Layout



1.3.1 Layout Content List

Slots			
Label	**Function**	**Note**	**Page**
SODIMM_A1	200-pin SODIMM slot 1		23,24
SODIMM_B1	200-pin SODIMM slot 2		23,24
PCIE x 16	PCI Express x16 Slot		27
MINI_PCIE	Mini PCI Express x1 slot		27

Jumpers			
Label	**Function**	**Note**	**Page**
CLRTC1	Clear CMOS	3 x 1 header, pitch 2.54mm	28

Rear Panel Connector			
Label	**Function**	**Note**	**Page**
KB + Mouse	PS/2 keyboard and mouse	6-pin Mini-Din	29
COM1 + VGA	Serial port connector VGA connector	D-sub 9-pin, male D-sub 15-pin, female	29,30
Display Port + HDMI	Display Port Connector HDMI connector	Display Port 20-pin HDMI 19-pin	29,30
LAN_USB1	RJ-45 Ethernet connector x 1 USB connector x 2		29,30
LAN_USB2	RJ-45 Ethernet connector x 1 USB connector x 2		29,30
AUDIO	Line-in port, Line-out port, Microphone port,	5.1 Channel Audio I/O (3 jacks)	30

Internal Connector			
Label	**Function**	**Note**	**Page**
EATXPWR	ATX power connector	12 x 2 header	31
ATX12V	ATX power connector	2 x 2 header	31
COM2	Serial port 2 connector	5 x 2 header, pitch 2.00mm	31
CPU_FAN	CPU fan connector	3 x 1 wafer, pitch 2.54mm	32
CHA_FAN	Chassis fan connector	3 x 1 wafer, pitch 2.54mm	33
F_PANEL1	System panel connector	5 x 2 header, pitch 2.54mm	34
AAFP1	Front Panel Audio Connector	5 x 2 header, pitch 2.54mm	32
JDIO01	Digital I/O connector	10 x 2 header, pitch 2.00m	35
JLVDS1	LVDS connector	HIROSE DF13S-40DP-1.25V	35
JBKL1	LCD Inverter connector	5 x 1 header, pitch 2.00mm	36
SPI1	SPI connector	4 x 2 header, pitch 2.54mm	37
SPDIF_OUT1	Digital Audio connector	4 x 1 header, pitch 2.54mm	37
SATA1,2,3,4	Serial ATA connectors 1,2,3,4	7-pin header	38
USB5,6	USB 2.0 connector	5 x 2 header, pitch 2.0mm	39
USB7,8	USB 2.0 connector	5 x 2 header, pitch 2.0mm	39

1.4 Central Processing Unit (CPU)

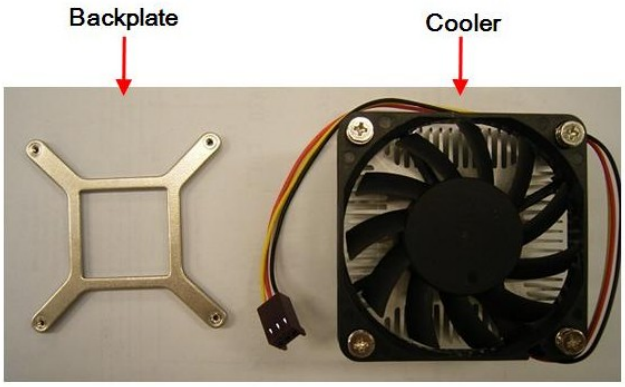
The motherboard comes with a surface mount the Intel® BGA1288 Core i7/i5/i3 Mobile process.

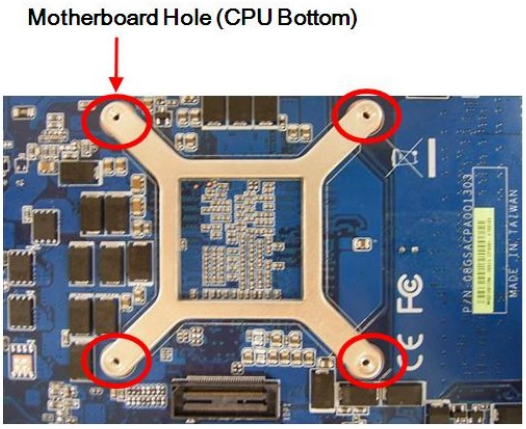
1.4.1 Installing the CPU Cooler

The Intel® Core i7/i5/i3 Mobile processor requires a specially designed Cooler assembly to ensure optimum thermal condition and performance.

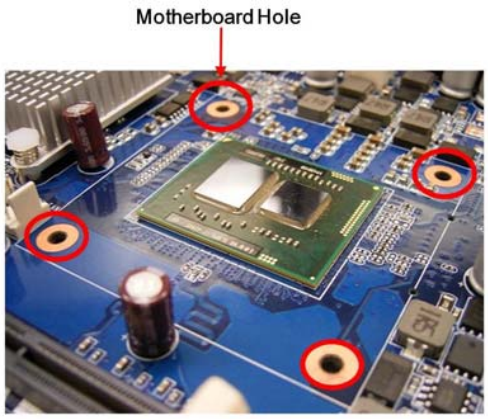
- Install the motherboard to the chassis before you install the CPU Cooler assembly.

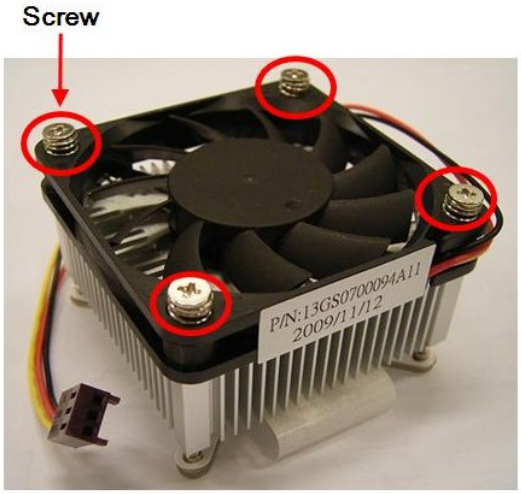
1. Place the backplate on the rear side of the CPU so that the screw bolts stick through the mounting holes.





2. Place the Cooler on top of the CPU, making sure that the four screws match the holes on the motherboard.

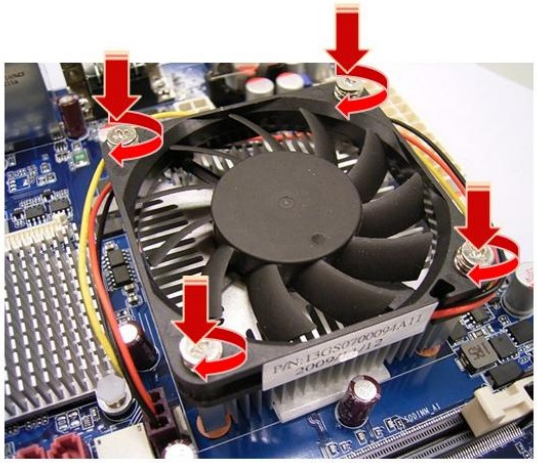




Orient the Cooler assembly such that the CPU fan cable is closest to the CPU fan connector.

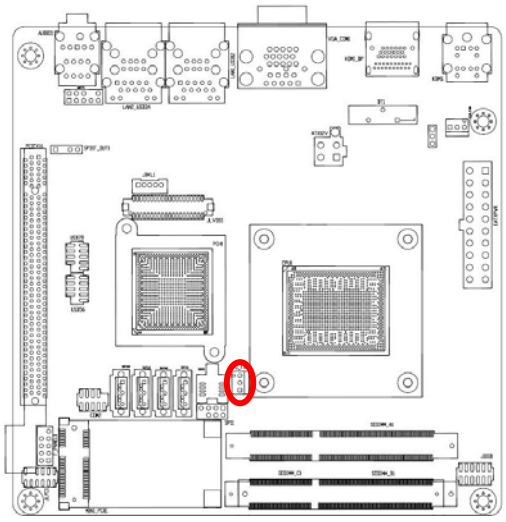
- Please take off the protection cover at the bottom side of the Cooler first!

3. Screwing Cooler to the screw bolts of the backplate.



- Tighten the screws until they stop.

4. Connect the CPU fan cable to the connector on the motherboard labelled **CPU_FAN1**.



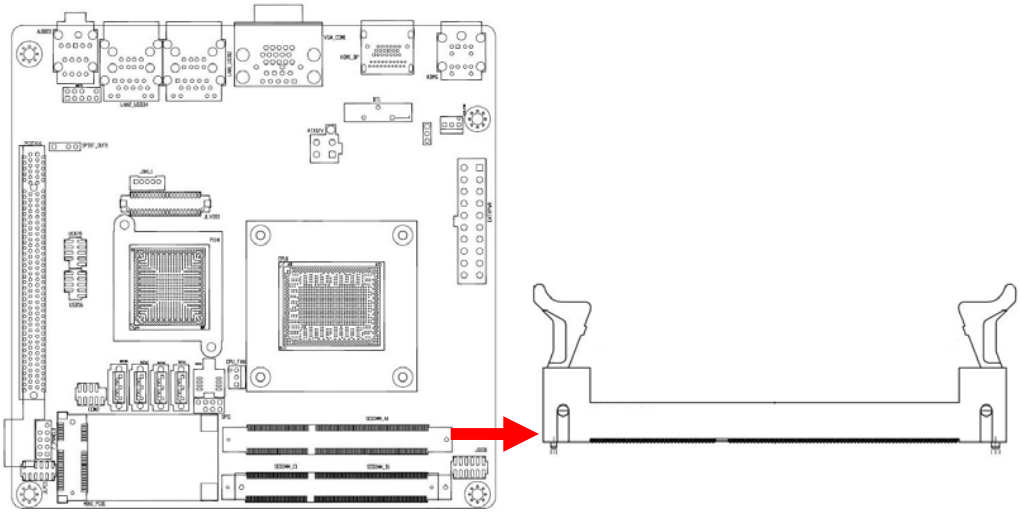
- Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components, and hardware monitoring errors can occur if you fail to plug this connector.
- These are not jumpers! DO NOT place jumper caps on the fan connectors.

1.5 System Memory

1.5.1 SO-DIMM Sockets Location

The motherboard comes with two 204-pin Double Data Rate 3 (DDR3) SO-DIMM sockets.

A DDR3 module has the same physical dimensions as a DDR2 SO-DIMM but has a 204-pin footprint compared to the 200-pin DDR2 DIMM. DDR3 SO-DIMMs are notched differently to prevent installation on a DDR2 SO-DIMM socket. The following figure illustrates the location of the sockets:



1.5.2 Memory Configurations

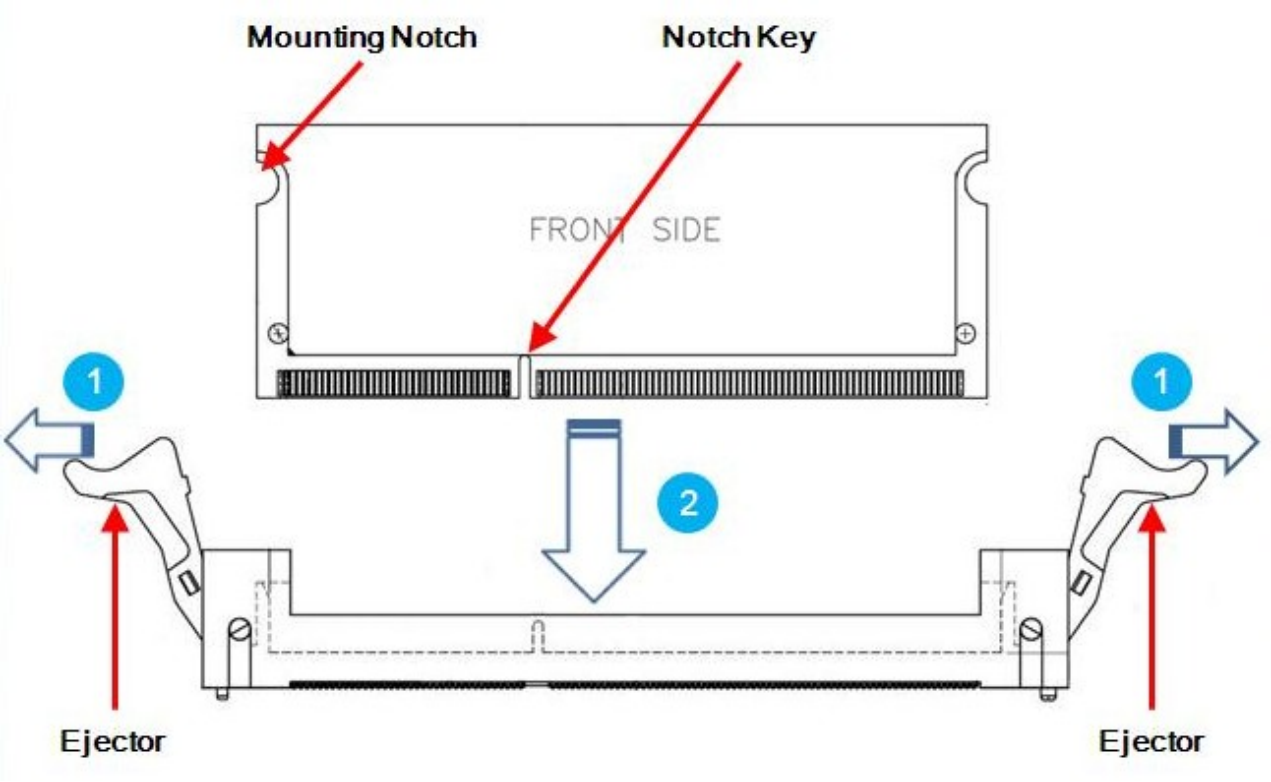
You can install 1GB, 2GB and 4GB DDR3 SDRAM SO-DIMMs into the SO-DIMM sockets using the memory configurations in this section.

- Installing DDR3 SO-DIMM other than the recommended configurations may cause memory sizing error or system boot failure. Use any of the recommended configurations.
- Always install SO-DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor.
- Due to chipset resource allocation, the system may detect less than 1 GB system memory when you installed one 1 GB DDR3 memory modules.

1.5.3 Installing a DDR3 SO-DIMM

Make sure to unplug the power supply before adding or removing SO-DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

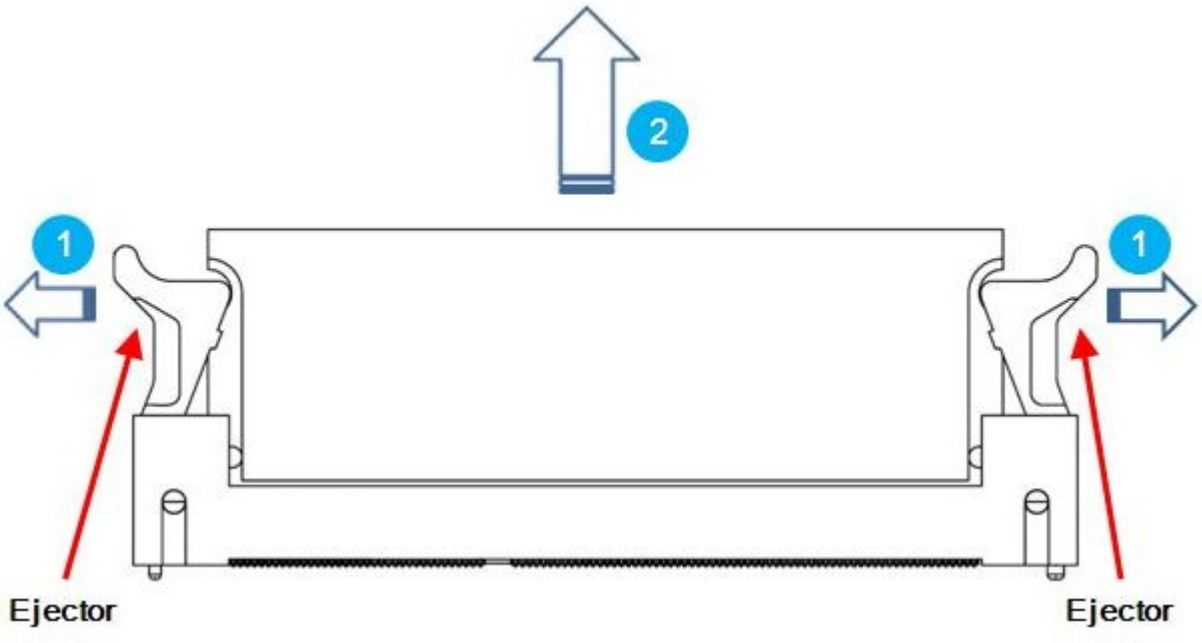
1. Unlock a SO-DIMM socket by pressing the retaining clips outward. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.
2. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM.



- A DDR3 SO-DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a SO-DIMM into a socket to avoid damaging the SO-DIMM.
- The DDR3 SO-DIMM sockets do not support DDR2 SO-DIMMs. DO NOT install DDR2 SO-DIMMs to the DDR3 SO-DIMM socket.

1.5.4 Removing a DDR3 SO-DIMM

1. Simultaneously press the retaining clips outward to unlock the SO-DIMM.
2. Remove the SO-DIMM from the socket.



Support the SO-DIMM lightly with your fingers when pressing the retaining clips. The SO-DIMM might get damaged when it flips out with extra force.

1.6 Expansion Slots

In the future, you may need to install expansion cards. The following sub-sections describe the slots and the expansion cards that they support.

Make sure to unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage motherboard components.

1.6.1 Installing an Expansion Card

1. Before installing the expansion card, read the documentation that came with it and make the necessary hardware settings for the card.
2. Remove the system unit cover (if your motherboard is already installed in a chassis).
3. Remove the bracket opposite the slot that you intend to use. Keep the screw for later use.
4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
5. Secure the card to the chassis with the screw you removed earlier.
6. Replace the system cover.

1.6.2 Configuring an Expansion Card

After installing the expansion card, configure it by adjusting the software settings.

1. Turn on the system and change the necessary BIOS settings if any.
2. Assign an IRQ to the card if needed. Refer to the tables on the next page.
3. Install the software drivers for the expansion card.

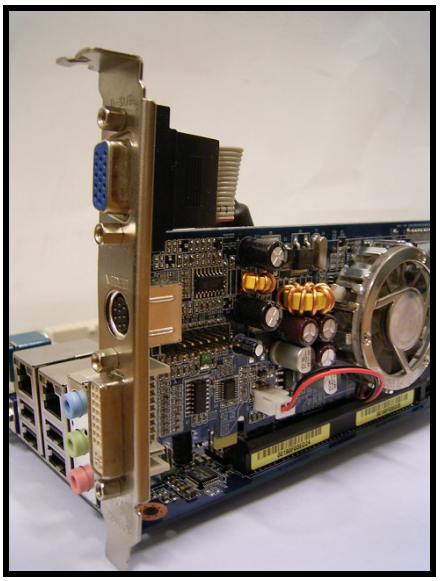
1.6.3 Standard Interrupt Assignments

IRQ	Priority	Standard Function
0	1	System Timer
1	2	Keyboard Controller
2	-	Redirect to IRQ#9
3	11	IRQ holder for PCI streering*
4	12	Communications Port (COM1)*
5	13	IRQ holder for PCI streering*
6	14	Floppy Disk Controller
7	15	Printer Port (LPT)*
8	3	System CMOS/Rear Time
9	4	IRQ holder for PCI streeing*
10	5	IRQ holder for PCI streeing*
11	6	IRQ holder for PCI streeing*
12	7	PS/2 Compatible Mouse Port*
13	8	Numeric Data Processor
14	9	Primary IDE Channel
15	10	Secondary IDE Channel

* There IRQs are usually available for ISA or PCI device.

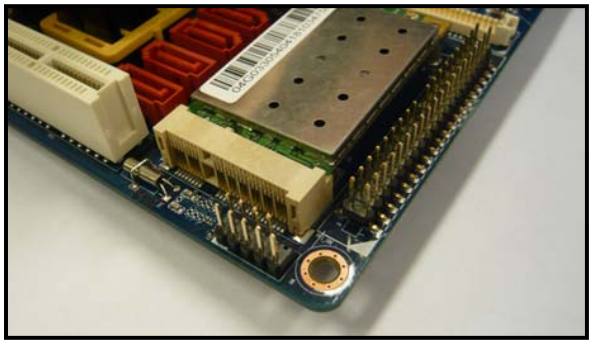
1.6.4 PCI Express x16

This motherboard supports PCI Express x16 Graphic cards, RAID cards and other cards that comply with the PCI Express specifications. The figure shows the type of Graphic card that can be installed on the PCI Express x16 slot.



1.6.5 Mini PCI Express x 1

This motherboard supports Mini PCI Express wireless LAN, and TV tuner device.



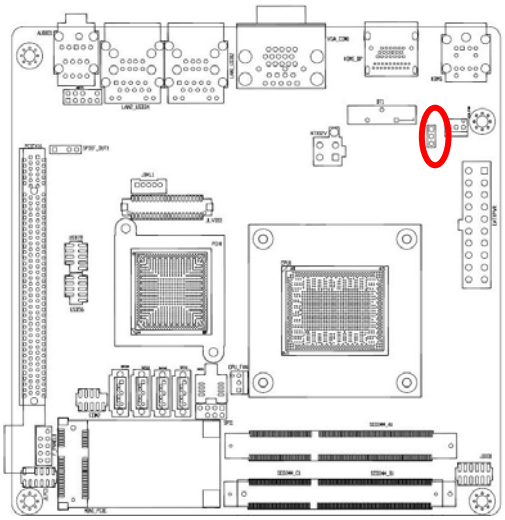
1.7 Jumpers

1.7.1 Clear CMOS (CLRTC1)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords. To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Remove the onboard battery.
3. Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 1-2.
4. Re-install the battery.
5. Plug the power cord and turn ON the computer.
6. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.

Except when clearing the CMOS, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure!

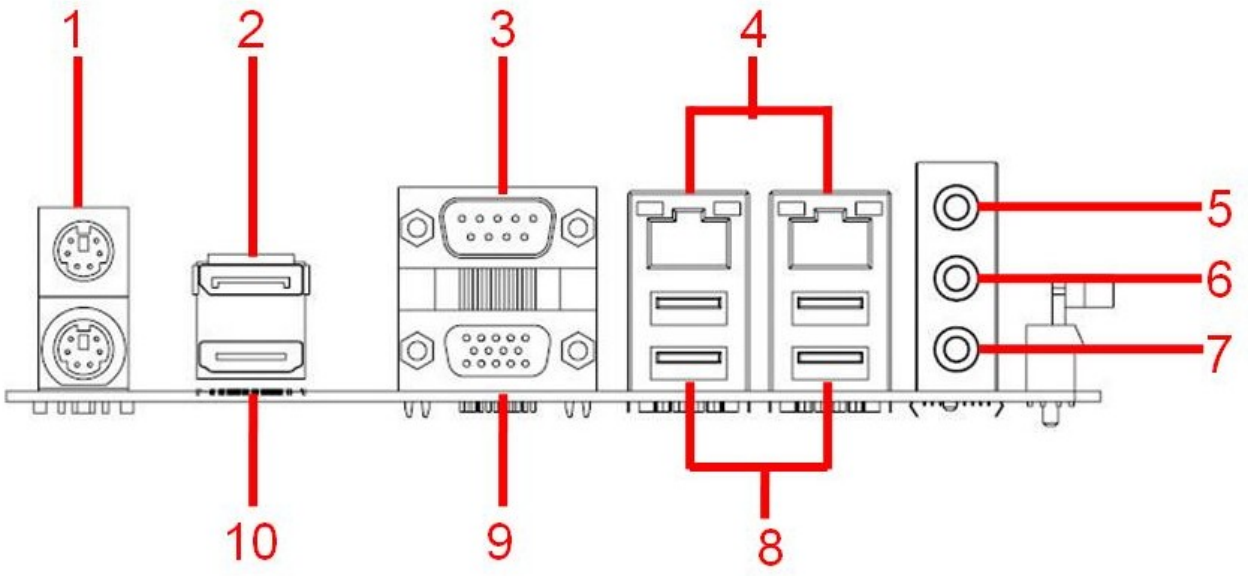


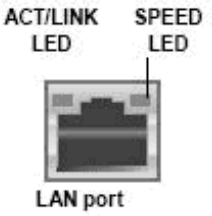
Normal (Default)

Clear RTC

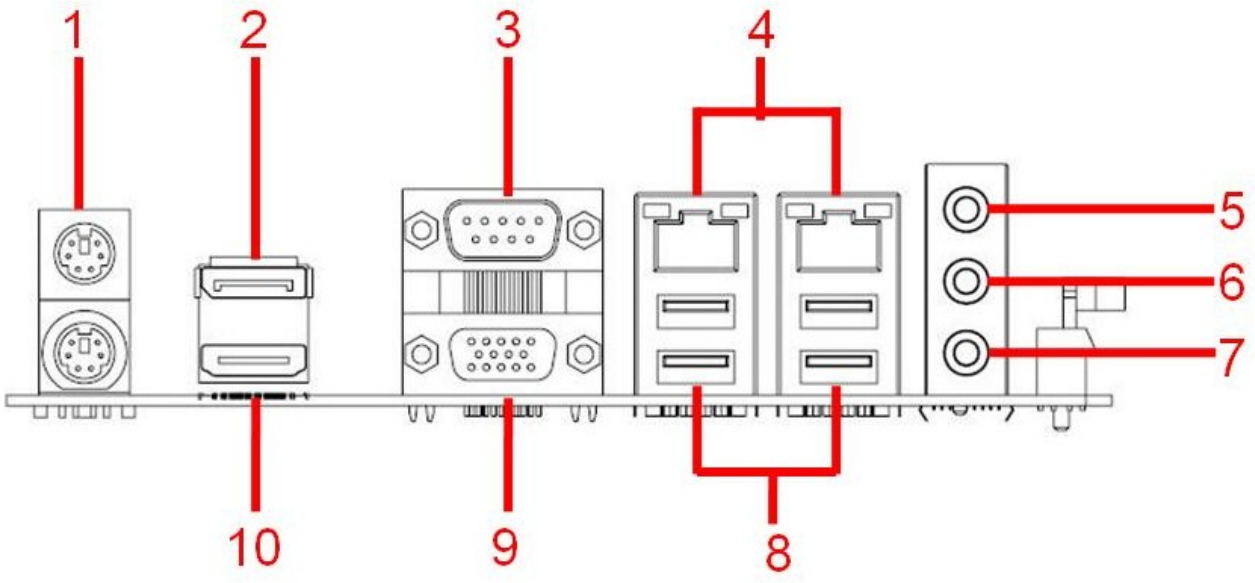
1.8 Connectors

1.8.1 Rear Panel Connectors



No	Label	Function	Description
1	KBMS	PS/2 Keyboard/Mouse connector	The standard PS/2 DIN connector is for a PS/2 Keyboard or mouse.
2	HDMI_DP	Display Port	Display Port 20-pin (Ver.1.1)
3	VGA_COM1	Serial port connector	D-sub 9-pin, male
4	LAN1_USB12, LAN2_USB34	LAN (RJ-45) connector 	This port allows Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications. The optional 10/100/1000 Mbps LAN controller allows 10/100/1000 Mbps connection to a Local Area Network (LAN) through a network hub.

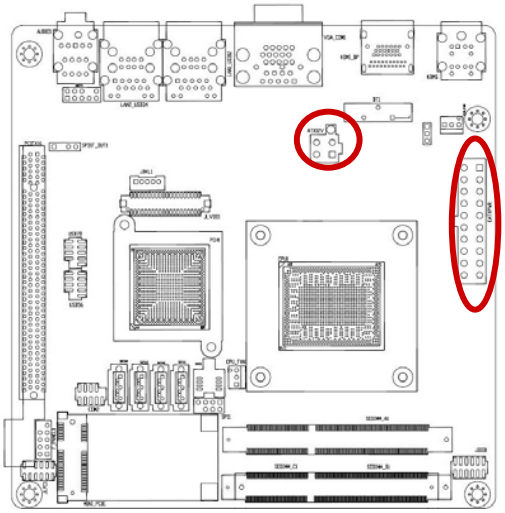
ACT / LINK LED		SPEED LED	
Status	**Description**	**Status**	**Description**
OFF	No link	OFF	10Mbps connection
Orange	Linked	ORANGE	100Mbps connection
Blinking	Data activity	GREEN	1Gbps connection

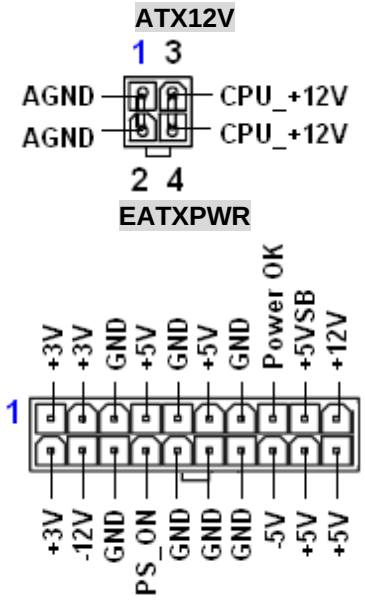


No	Label	Function	Description
5	AUDIO1	Line-In port (Light Blue).	This port connects a tape, CD, DVD player, or other audio sources.
6	AUDIO1	Line-Out port (Lime)	This port connects a headphone or a speaker. In 4-channel, 6-channel, and 8-channel configuration, the function of this port becomes Front Speaker Out.
7	AUDIO1	Microphone port (Pink)	This port connects a microphone.
8	LAN1_USB12, LAN2_USB34	USB 2.0 connector	These four 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
9	VGA_COM1	VGA port	D-sub15-pin VGA port connects to a VGA monitor.
10	HDMI_DP	HDMI connector	High Definition Media Interface 19P connector

1.8.2 ATX Power Connector (EATXPWR, ATX12V)

These connectors are for ATX power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.

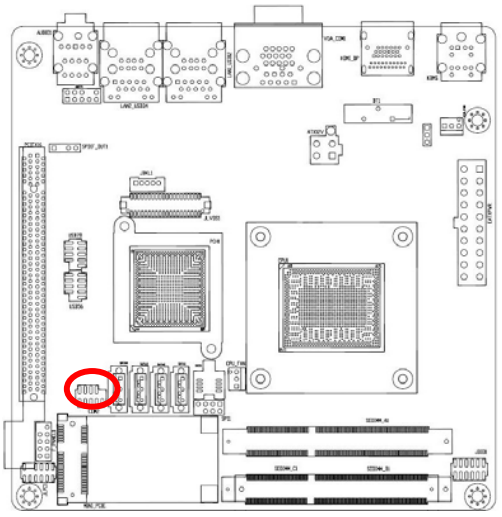


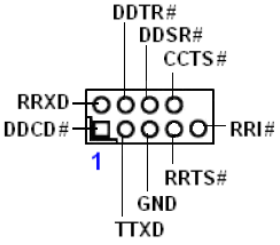


Important notes on the Motherboard Power Requirements

- Make sure that your ATX 12V power supply can provide 8A on the +12V lead and at least 1A on the +5-volt standby lead (+5VSB). The minimum recommended wattage is 230W, or 300W for a fully configured system. The system can become unstable and might experience difficulty powering up if the power supply is inadequate.
- You must install a PSU with a higher power rating if you intend to install additional devices.

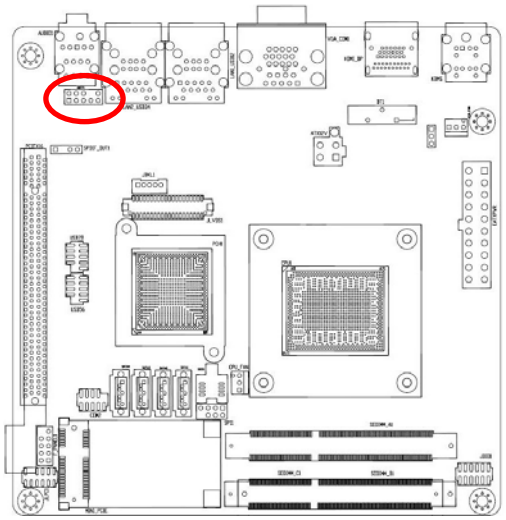
1.8.3 Serial Port 2 Connector (COM2)

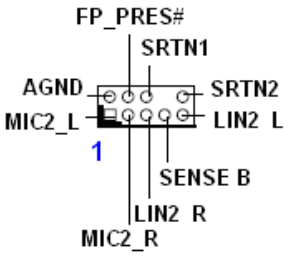




1.8.4 Front Panel Audio Connector (AAFP1)

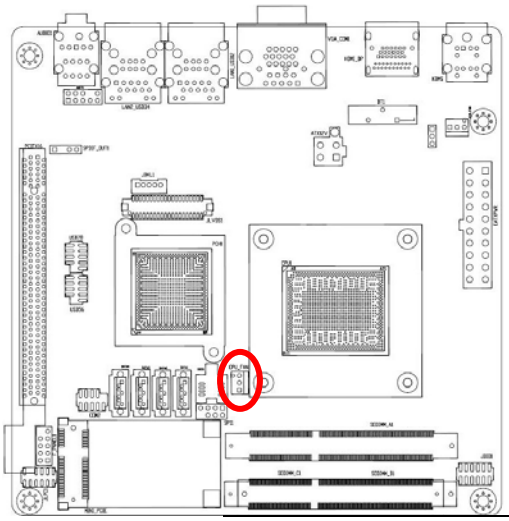
This connector is for a chassis-mounted front panel audio I/O module that supports either HD Audio or legacy AC ‘97 (optional) audio standard. Connect one end of the front panel audio I/O module cable to this connector.





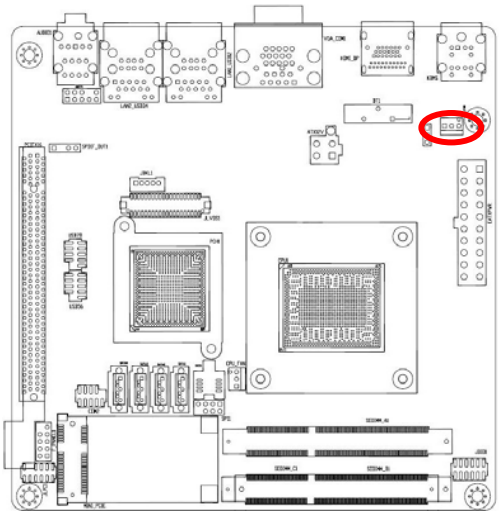
For motherboards with the optional HD Audio feature, we recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard’s high‑definition audio capability.

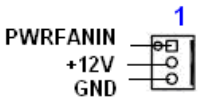
1.8.5 CPU Fan Connector (CPU_FAN)



- Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components, and hardware monitoring errors can occur if you fail to plug this connector.
- These are not jumpers! DO NOT place jumper caps on the fan connectors.

1.8.6 Chassis Fan Connector (CHA_FAN)

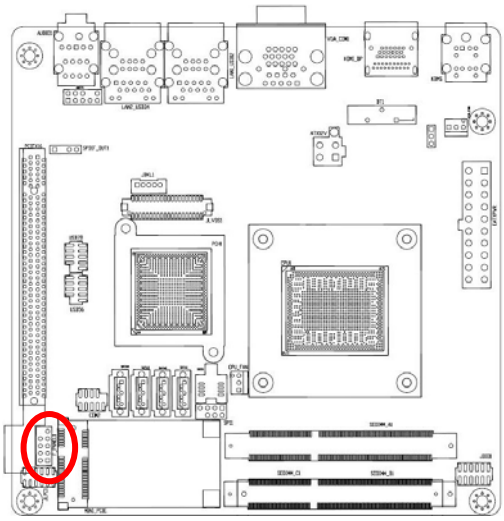


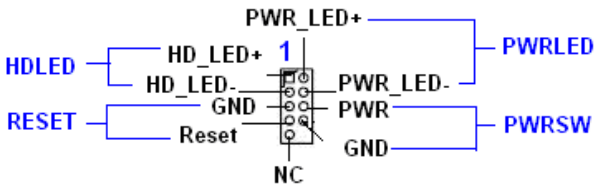


- Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components, and hardware monitoring errors can occur if you fail to plug this connector.
- These are not jumpers! DO NOT place jumper caps on the fan connectors.

1.8.7 System Panel Connector (F_PANEL1)

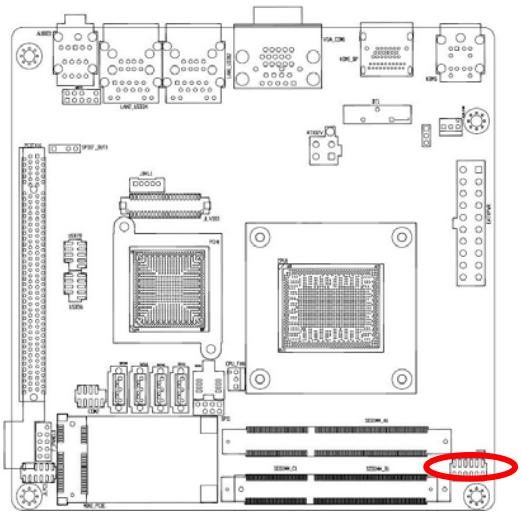
This connector supports several chassis-mounted functions.

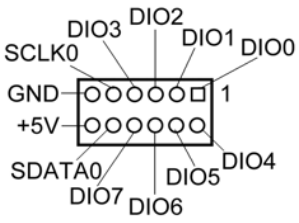




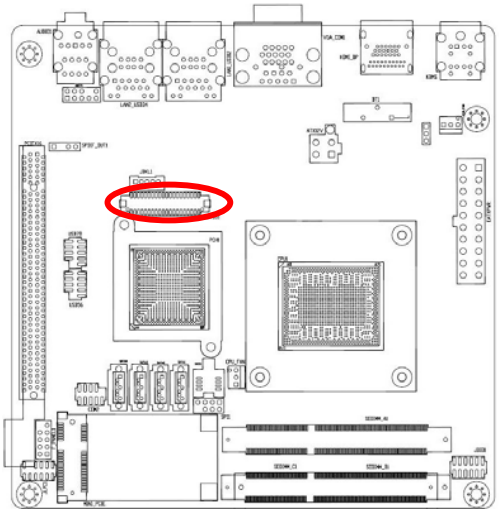
- **System Power LED (2-pin PWRLED)**
  This 2-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.
- **ATX Power Button/Soft-off Button (2-pin PWRSW)**
  This connector is for the system power button. Pressing the power button turns the system on or puts the system in sleep or soft-off mode depending on the BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.
- **Hard Disk Drive Activity LED (2-pin HDLED)**
  This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.
- **Reset Button (2-pin RESET)**
  This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

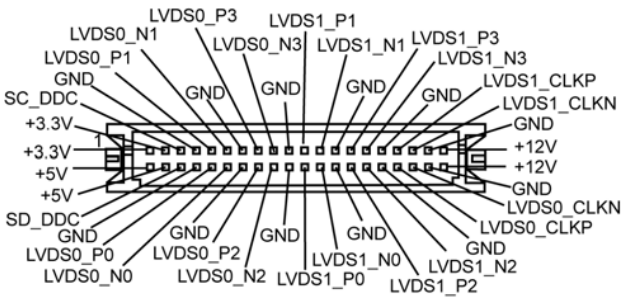
1.8.8 Digital I/O Connector (JDIO01)



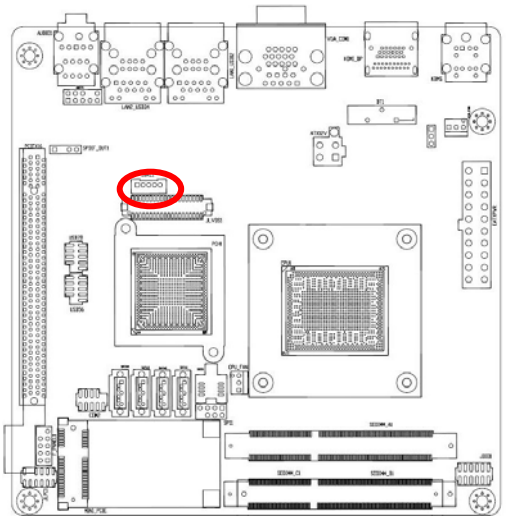


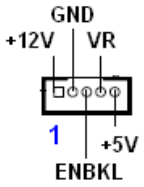
1.8.9 LVDS Connector (JLVDS1)





1.8.10 LCD Inverter Connector (JBKL1)

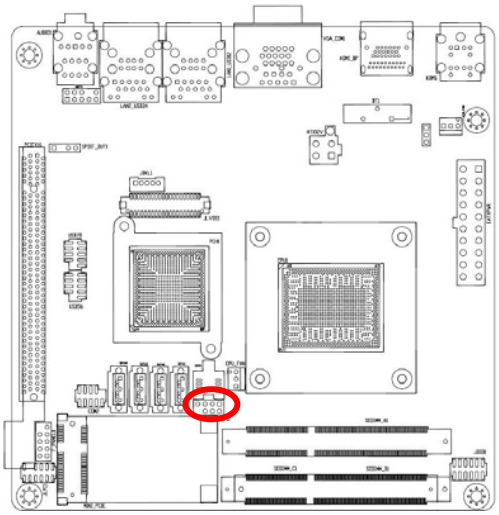


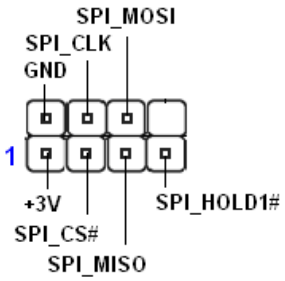


- **Signal Description**

Signal	Signal Description
VR	Bright adjust. Vadj=0.75V ~ 4.25V (Recommended: 4.7KΩ, > 1/16W)
ENBKL	LCD backlight ON/OFF control signal

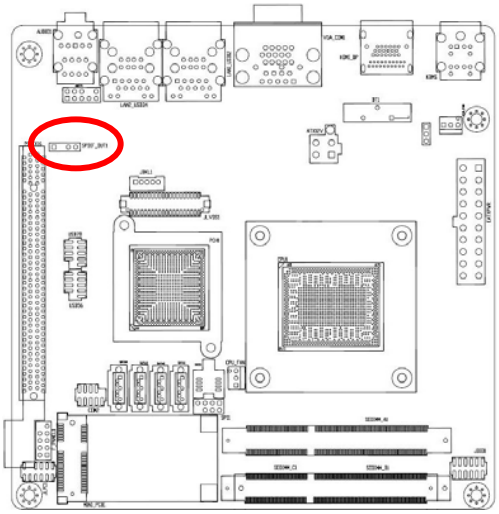
1.8.11 SPI Connector (SPI1)

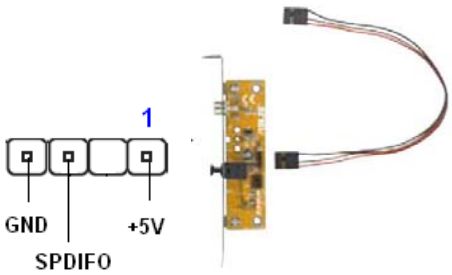




1.8.12 Digital Audio Connector (SPDIF_OUT1)

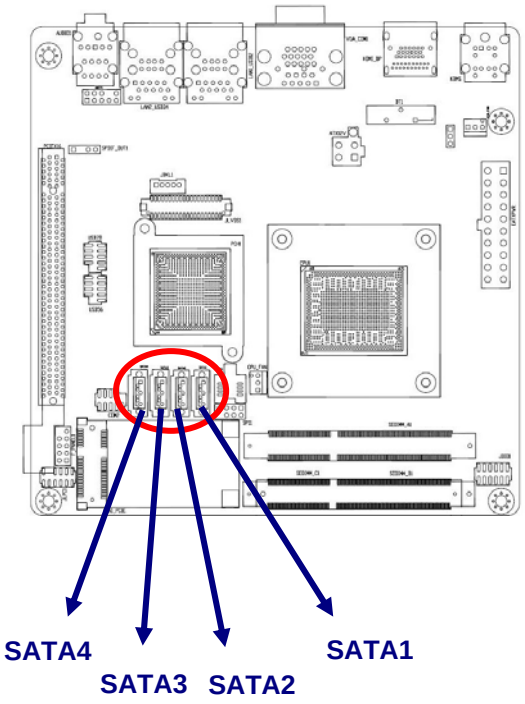
This connector is for an additional Sony/Philips Digital Interface (S/PDIF) port(s). Connect the S/PDIF module cable to this connector, then install the module to a slot opening at the back of the system chassis.

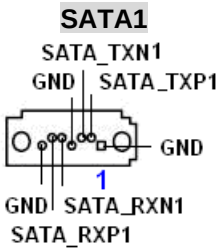


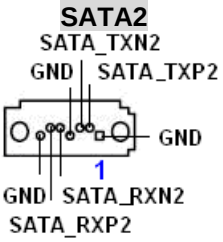


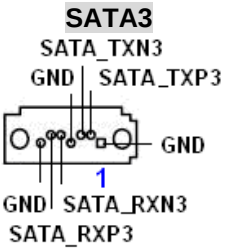
The S/PDIF module is purchased separately.

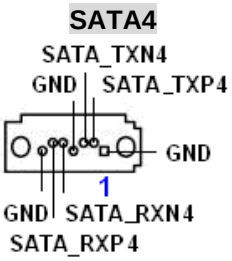
1.8.13 Serial SATA Connector (SATA1, SATA2, SATA3, SATA4)







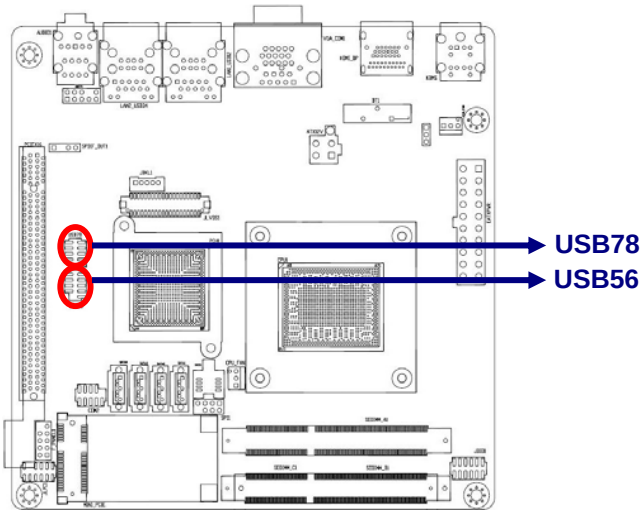


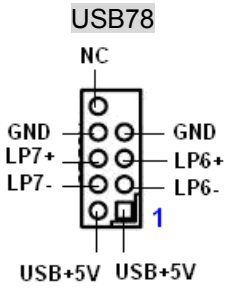


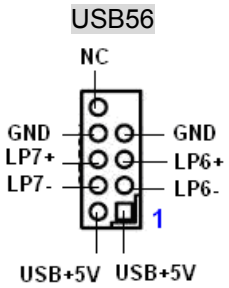
- Install the Windows® 2000 Service Pack 4 or the Windows® XP Service Pack1 before using Serial ATA.
- When using the connectors in Standard IDE mode, connect the primary (boot) hard disk drive to the SATA1 connector.

1.8.14 USB 2.0 Connector (USB78, USB56)

These connectors are for USB 2.0 ports. Connect the USB/GAME module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specification that supports up to 480 Mbps connection speed.







Never connect a **1394 cable** to the USB connectors. Doing so will damage the motherboard!

The USB module is purchased separately.

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